

Interview Summary	Application No.	Applicant(s)	
	10/635,078	PECK, JOSEPH E.	
	Examiner	Art Unit	
	Tuan A. Vu	2193	

All participants (applicant, applicant's representative, PTO personnel):

(1) Tuan A. Vu. (3)_____.

(2) Jeff Hood. (4)_____.

Date of Interview: 06 July 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
If Yes, brief description: _____.

Claim(s) discussed: 1,23,27,28,32 and 36.

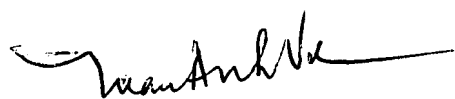
Identification of prior art discussed: n/a.

Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.



Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Examiner's signature, if required

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The interview was initiated by the Examiner in order to propose the following changes to the latest amendments filed: add some hardware support in the system claim to avert statutory type of deficiencies; to specify that 'program instructions' are those stored in the computer medium in some claims to help distinguishing those from the claimed 'program' which is further respecified as 'debugged program' and propagating those changes to dependent claims also. It was concurred that the claims would be in condition for allowance when all the proposals are implemented via an Examiner's Amendment .

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/635,078

Filed: August 6, 2003

Inventor(s):

Joseph E. Peck

Title: EMULATION OF A
PROGRAMMABLE
HARDWARE ELEMENT§
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Examiner: Vu, Tuan A.

Group/Art Unit: 2193

Atty. Dkt. No: 5150-79600

**PROPOSED RESPONSE
FOR ENTRY INTO EXAMINER'S AMENDMENT**

Dear Sir or Madam:

This paper is submitted in response to an Examiner request made on July 6, 2007.

Please amend the case as listed below.

IN THE CLAIMS:

The following listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A memory medium comprising program instructions for debugging a program to generate a debugged program, wherein the program is intended for deployment on a programmable hardware element to perform a function, wherein the program instructions stored on the memory medium are executable to perform:

a) converting a first portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function, wherein the first portion of the program comprises debugged program instructions, and wherein a remaining portion of the program is to be debugged by a user using a computer system;

b) configuring the programmable hardware element with the first hardware configuration program;

c) executing the program, wherein said executing comprises:

the programmable hardware element executing the first portion of the program; and

the computer system executing the remaining portion of the program;

wherein the remaining portion of the program is operable to be analyzed and debugged in response to said executing;

d) receiving user input modifying the remaining portion of the program to debug the remaining portion of the program, and adjusting respective sizes of the first portion and the remaining portion based on the debugging; and

repeating a) – d) one or more times in an iterative manner to debug the program, wherein for one or more iterations, said adjusting comprises moving debugged program instructions from the remaining portion to the first portion to increase the size of the first portion of the program.

2. (Cancelled).

3. (Previously Presented) The memory medium of claim 1, wherein for one or more other iterations, said adjusting comprises moving program instructions from the first portion to the remaining portion for further debugging, thereby decreasing the size of the first portion of the program.

4. (Currently Amended) The memory medium of claim 1, wherein the program instructions stored on the memory medium are further executable to implement:

after the program has been debugged,

converting the program into a second hardware configuration program which is deployable on the programmable hardware element to perform the function; and

configuring the programmable hardware element with the second hardware configuration program.

5. (Original) The memory medium of claim 1,

wherein said converting the first portion of the program into a first hardware configuration program comprises receiving user input indicating the first portion of the program.

6. (Original) The memory medium of claim 1, wherein the programmable hardware element is coupled to one or more hardware resources, and wherein said executing further comprises:

invoking the one or more hardware resources to perform the function.

7. (Currently Amended) The memory medium of claim 6, wherein the program is specified to access the one or more hardware resources, and wherein the program instructions stored on the memory medium are further executable to perform:

prior to said configuring the programmable hardware element with the first hardware configuration program,

analyzing the remaining portion of the program and the one or more hardware resources;

determining a test feed-through configuration based on said analyzing, wherein the test feed-through configuration is deployable on the programmable hardware element to provide for communication between the remaining portion of the program and the one or more hardware resources; and

including the test feed-through configuration in the first hardware configuration program;

wherein said configuring the programmable hardware element with the first hardware configuration program further comprises configuring the programmable hardware element with the test feed-through configuration; and

wherein said executing the remaining portion of the program further comprises the remaining portion of the program communicating with the one or more hardware resources through the programmable hardware element.

8. (Cancelled).

9. (Previously Presented) The memory medium of claim 7, wherein said determining a test feed-through configuration and said including the test feed-through configuration in the first hardware configuration program are performed only if the remaining portion of the program is specified to access the one or more hardware resources.

10. (Previously Presented) The memory medium of claim 7, wherein said determining the test feed-through configuration comprises modifying the test feed-through configuration based on said analyzing the remaining portion of the program.

11. (Cancelled).

12. (Currently Amended) The memory medium of claim 7, wherein the program instructions stored on the memory medium are further executable to perform:

determining the one or more hardware resources.

13. (Original) The memory medium of claim 12, wherein said determining the one or more hardware resources comprises:

receiving user input indicating the one or more hardware resources.

14. (Original) The memory medium of claim 12, wherein said determining the one or more hardware resources comprises:

querying the one or more hardware resources.

15. (Original) The memory medium of claim 7, wherein said determining the test feed-through configuration comprises:

determining a plurality of pre-compiled hardware configuration program components; and

assembling the plurality of pre-compiled hardware configuration program components, thereby generating the test feed-through configuration.

16. (Original) The memory medium of claim 7, wherein said determining the test feed-through configuration comprises:

generating a test feed-through software program based on said analyzing; and

compiling the test feed-through software program, thereby generating the test feed-through configuration.

17. (Currently Amended) The memory medium of claim 16, wherein the program instructions stored on the memory medium are further executable to perform:

storing the test feed-through configuration on the computer system, wherein the stored test feed-through configuration is retrievable for use in other reconfigurable systems using the one or more hardware resources.

18. (Original) The memory medium of claim 7, wherein said determining the test feed-through configuration comprises:

determining a plurality of pre-compiled hardware configuration program components;

assembling the plurality of pre-compiled hardware configuration program components, thereby generating a first portion of the test feed-through configuration;
generating a test feed-through software program based on said analyzing;
compiling the test feed-through software program, thereby generating a second portion of the test feed-through configuration; and
combining the first portion of the test feed-through configuration and the second portion of the test feed-through configuration, thereby generating the test feed-through configuration.

19. (Original) The memory medium of claim 7, wherein at least a subset of the one or more hardware resources comprises one or more hardware cartridges.

20. (Original) The memory medium of claim 19, wherein at least one of the one or more hardware cartridges comprises an I/O cartridge.

21. (Original) The memory medium of claim 1, wherein the first portion of the program comprises a substantially debugged portion of the program.

22. (Original) The memory medium of claim 1, wherein the computer system executing the remaining portion of the program simulates execution of the remaining portion of the program on the programmable hardware element.

23. (Currently Amended) A memory medium comprising program instructions for debugging a program to generate a debugged program, wherein the program is usable to configure a reconfigurable system, wherein the program performs a function, wherein the reconfigurable system includes a programmable hardware element, wherein the program is intended for deployment on the programmable hardware element, wherein the program instructions stored on the memory medium are executable to perform:

a) receiving user input indicating a first portion of the program for deployment on the programmable hardware element, wherein the first portion of the program comprises

debugged program instructions, and wherein a remaining portion of the program is to be debugged by a user using a computer system;

b) converting the first portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function;

c) configuring the programmable hardware element with the first hardware configuration program;

d) executing the program, wherein said executing comprises:

the programmable hardware element executing the first portion of the program; and

the computer system executing the remaining portion of the program;

wherein the remaining portion of the program is operable to be analyzed and debugged in response to said executing;

e) receiving user input modifying the remaining portion of the program to debug the remaining portion of the program, and adjusting respective sizes of the first portion and the remaining portion based on the debugging; and

repeating a) – e) one or more times in an iterative manner, wherein for one or more iterations, said adjusting comprises moving debugged program instructions from the remaining portion to the first portion to increase the size of the first portion of the program.

24. (Currently Amended) The memory medium of claim 23, wherein the program instructions stored on the memory medium are further executable to implement:

after the program has been debugged,

converting the program into a second hardware configuration program which is deployable on the programmable hardware element to perform the function; and

configuring the programmable hardware element with the second hardware configuration program;

25. (Cancelled).

26. (Previously Presented) The memory medium of claim 23, wherein for one or more other iterations, said adjusting comprises moving program instructions from the first portion to the remaining portion for further debugging, thereby decreasing the size of the first portion of the program.

27. (Currently Amended) A memory medium comprising program instructions for debugging a program to generate a debugged program, wherein the program is usable to configure a reconfigurable system, wherein the program performs a function, wherein the reconfigurable system includes a programmable hardware element, wherein the program is intended for deployment on the programmable hardware element, wherein the program instructions stored on the memory medium are executable to perform:

receiving user input indicating a first portion of the program for deployment on the programmable hardware element, wherein the first portion of the program comprises debugged program instructions, and wherein a first remaining portion of the program is to be debugged by a user using a computer system;

converting the first portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function;

configuring the programmable hardware element with the first hardware configuration program;

executing the program, wherein said executing comprises:

the programmable hardware element executing the first portion of the program; and

the computer system executing the first remaining portion of the program;

wherein the remaining portion of the program is operable to be analyzed and debugged in response to said executing;

receiving user input modifying the remaining portion of the program to debug the remaining portion of the program;

receiving user input indicating a second portion of the program for deployment on the programmable hardware element, wherein the second portion of the program comprises the first portion of the program and a debugged portion of the first remaining

portion of the program, wherein a second remaining portion of the program is to be debugged by a user, wherein the second remaining portion comprises only a subset of the first remaining portion of the program;

converting the second portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function;

configuring the programmable hardware element with the first hardware configuration program;

executing the program, wherein said executing comprises:

the programmable hardware element executing the second portion of the program; and

the computer system executing the second remaining portion of the program.

28. (Currently Amended) A system for debugging a program to generate a debugged program, wherein the program is intended for deployment on a programmable hardware element to perform a function, the system comprising:

a reconfigurable device, comprising:

a programmable hardware element; and

a computer system comprising a processor and a memory;

wherein the computer system is coupled to the reconfigurable device;

wherein the memory stores program instructions which are executable by the processor to:

a) convert a first portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function, wherein the first portion of the program comprises debugged program instructions, and wherein a remaining portion of the program is to be debugged by a user;

b) configure the programmable hardware element with the first hardware configuration program;

c) execute the program, wherein in executing the program:

the programmable hardware element executes the first portion of the program; and

the computer system executes the remaining portion of the program;

wherein the remaining portion of the program is operable to be analyzed and debugged in response to said executing;

d) receive user input modifying the remaining portion of the program to debug the remaining portion of the program, and adjusting respective sizes of the first portion and the remaining portion based on the debugging; and

repeat a) – d) one or more times in an iterative manner, wherein for one or more iterations, said adjusting comprises moving debugged program instructions from the remaining portion to the first portion to increase the size of the first portion of the program.

29. (Cancelled).

30. (Previously Presented) The system of claim 28, wherein for one or more other iterations, said adjusting comprises moving program instructions from the first portion to the remaining portion for further debugging, thereby decreasing the size of the first portion of the program.

31. (Currently Amended) The system of claim 28, wherein the program instructions stored on the memory are further executable to:

after the program has been debugged,

convert the program into a second hardware configuration program which is deployable on the programmable hardware element to perform the function; and

configure the programmable hardware element with the second hardware configuration program.

32. (Currently Amended) A system for debugging a program to generate a debugged program, wherein the program is intended for deployment on a programmable hardware element to perform a function, the system comprising a computer system including:

means for a) converting a first portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function, wherein the first portion of the program comprises debugged program instructions, and wherein a remaining portion of the program is to be debugged by a user using the computer system;

means for b) configuring the programmable hardware element with the first hardware configuration program;

means for c) executing the program, wherein said executing comprises:

the programmable hardware element executing the first portion of the program; and

the computer system executing the remaining portion of the program;

wherein the remaining portion of the program is operable to be analyzed and debugged in response to said executing;

means for d) receiving user input modifying the remaining portion of the program to debug the remaining portion of the program, and adjusting respective sizes of the first portion and the remaining portion based on the debugging; and

means for repeating a) – d) one or more times in an iterative manner, wherein for one or more iterations, said adjusting comprises moving debugged program instructions from the remaining portion to the first portion to increase the size of the first portion of the program.

33. (Cancelled).

34. (Previously Presented) The system of claim 32, wherein for one or more other iterations, said adjusting comprises moving program instructions from the first portion to the remaining portion for further debugging, thereby decreasing the size of the first portion of the program.

35. (Currently Amended) The system of claim 32, ~~further comprising the computer~~ further including:

after the program has been debugged,

means for converting the program into a second hardware configuration program which is deployable on the programmable hardware element to perform the function;

means for configuring the programmable hardware element with the second hardware configuration program.

36. (Currently Amended) A method for debugging a program to generate a debugged program, wherein the program is intended for deployment on a programmable hardware element to perform a function, the method comprising:

a) converting a first portion of the program into a first hardware configuration program which is deployable on the programmable hardware element to perform a corresponding first portion of the function, wherein the first portion of the program comprises debugged program instructions, and wherein a remaining portion of the program is to be debugged by a user using a computer system;

b) configuring the programmable hardware element with the first hardware configuration program;

c) executing the program, wherein said executing comprises:

the programmable hardware element executing the first portion of the program; and

the computer system executing the remaining portion of the program;

wherein the remaining portion of the program is operable to be analyzed and debugged in response to said executing; and

d) receiving user input modifying the remaining portion of the program to debug the remaining portion of the program, and adjusting respective sizes of the first portion and the remaining portion based on the debugging; and

repeating a) – d) one or more times in an iterative manner, wherein for one or more iterations, said adjusting comprises moving debugged program instructions from the remaining portion to the first portion to increase the size of the first portion of the program.

37. (Cancelled).

38. (Previously Presented) The method of claim 36, wherein for one or more other iterations, said adjusting comprises moving program instructions from the first portion to the remaining portion for further debugging, thereby decreasing the size of the first portion of the program.

39. (Original) The method of claim 36, the method further comprising:

after the program has been debugged,

converting the program into a second hardware configuration program which is deployable on the programmable hardware element to perform the function; and

configuring the programmable hardware element with the second hardware configuration program.

REMARKS

Applicant submits this proposed amendment at the request of the Examiner for entry by the Examiner into an Examiner's Amendment.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any extensions of time (under 37 C.F.R. § 1.136) are necessary to prevent the above-referenced application(s) from becoming abandoned, Applicant(s) hereby petition for such extensions. The Commissioner is hereby authorized to charge any fees which may be required or credit any overpayment to Meyertons, Hood, Kivlin, Kowert & Goetzel P.C., Deposit Account No. 50-1505/5150-79600/JCH.

Also filed herewith are the following items:

- ☐ Request for Continued Examination
- ☐ Terminal Disclaimer
- ☐ Power of Attorney By Assignee and Revocation of Previous Powers
- ☐ Notice of Change of Address
- ☐ Other:

Respectfully submitted,

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ATTORNEY FOR APPLICANT(S)

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Date: July 6, 2007 JCH